Small Business Clustering: Accessing Knowledge through Local Networks

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Abstract

Over the last decade there has been considerable interest and activity in clustering and the concomitant link to regional development. In the world economy small and medium enterprises (SMEs) are now recognised as playing a pivotal role in regional economic sustainability and growth, yet there is relatively little research that examines SME clustering processes, and in particular the nature of knowledge creation in local/regional SME networks. This paper discusses the topic of small business clustering and local network knowledge transfer. It outlines some of the key literature on clustering within a regional development context and discusses the implications on industry and place vis-à-vis regional cluster learning, knowledge creation and innovation. To illustrate SME clustering and knowledge transfer issues, the paper briefly highlights three regional Australian small business clustering studies. The paper concludes with some future directions for SME clustering in terms of policy, industry and place.

Keywords: small business clustering; network learning, knowledge creation.

Introduction

Over the last decade there has been considerable interest and activity in clustering and the concomitant link to regional development. It is widely accepted that technological change underpins a global economy and that geographic location and concentration is of foremost importance for regional development and competitive advantage (Porter, 2000). In the context of emerging technologies and related knowledge-economy business models, linking stakeholders in dynamic clusters is believed to enhance competition and regional innovation (OECD, 1999). The literature is saturated with views on geographic proximity, or clustering of industries, companies and institutions (Asheim, 2001; Brusco, 1990; Krugman, 1995; Porter, 1990).

The geographic scope of clusters can vary from a single city, state or region to a network of companies across state borders or even country borders. There are various clustering forms that may ensue to optimise competitive advantage. Clustering can be formal or informal, in the public or private sector; horizontal or vertical; physical; and even sometimes virtual. In horizontal clustering companies within the same industry sector are co-located in a particular geographic area and might share an industrial or technological base, operate within a common market and a use a common purchasing and/or distribution channel (Michael, 2001). Vertical networks include horizontal cluster participants as well as supply chain members such as suppliers, consumers and related services (Boekholt, 1997). Diagonal clustering refers to the concentration of complementary or symbiotic activities, whereby each firm adds value to the other. There are of course many other cluster dimensions that could be examined, e.g., density elements, breadth and depth of a cluster, industry activities, cluster governance, to name but a few, which fall outside the discussion scope of this paper.

As industry clusters become more accepted, their definition, boundaries and composition become more complex, which has led some cluster researchers, e.g., Rosenfeld (1997, 2001, 2003), to focus on clustering activities rather than on clusters as such. This paper focuses on regional SME clustering activities with an emphasis on regional relationships and local network learning. The cluster definition adopted for this paper is a geographic co-location of activities that are linked horizontally, vertically or diagonally along the value chain. This co-location serves as an attractant to new companies wishing to access intelligent services and goods (McKinsey and Co, 2000) and facilitates knowledge transfer, either formally or through spillovers. Learning and knowledge creation among cluster participants can improve cluster efficiency and effectiveness, and may act as a spur to innovation. As the cluster gains an identity it becomes an attractant to new entrants, e.g., suppliers, buyers and institutions, and creates major external economies for cluster participants. With the exception of virtual clustering, where geographic proximity is not necessarily applicable, much of the cluster literature emphasizes the importance of local networks and local/regional relationships for competitive advantage (McRae-Williams, Lowe, & Taylor, 2005).

Porter discusses competitive advantage as being “created and sustained through a highly localized process" (Porter, 1990, 19) and ascribes enduring competitive advantage in a global economy to local knowledge, relationships and motivation that cannot be duplicated by global partnering (Porter, 1998b). Critical to Porter’s analysis of clusters are the dynamic effects created by interaction of industry and place (Porter, 2003). His theory on successful local cluster development in a global economy depends

on four main factors: (1) context for firm strategy and rivalry inside the cluster, e.g., competition and collaboration put pressure on productivity; (2) demand conditions, e.g., level of sophistication and demand of consumers; (3) related and supporting industries, e.g., the supporting suppliers and ancillary industry; and (4) factor conditions, e.g., availability of infrastructure, skills and capital (Porter, 2000). Factor conditions support the development of the cluster. Thus, in Porter's model the interaction between these factors or the competition and consumer pressure leads to pressure on productivity and hence to innovation, in which both location and place are potentially important. Although Porter's model has been influential in the operational aspects of (mature) clusters, it is weak in terms of SME clustering processes.

Clustering is partly determined by industry. McKinsey and Co (2000) suggest that intelligent capital intensifies with geographic proximity. Industry type influences knowledge dynamics through the impact on intelligent capital, specialised labour, 'industry' knowledge and customised product. Whilst both industry and geography are necessary elements, neither is sufficient on its own; one factor might dominate or, each factor might operate effectively only in the presence of the other (McRae-Williams et al., 2005). In this paper it is suggested that industry plays a key role as knowledge is embedded within industry.

Clustering is also partly determined by knowledge diffusion, which relies on two critical factors: (1) geographic proximity and (2) social structure (Enright 2001). Rosenfeld (1997) distinguishes clustering activities by the intensity of social infrastructure and firm interaction, firmly placing social capital and trust as the basis of collaboration, information and knowledge flows in regional clusters. Swann et al (1998) similarly positions relational capital at the core of cluster strength and as the foundation of its knowledge base. Porter actually suggests that there is a gap in the cluster literature around social structures (Porter, 1998a), which may be more important for SMEs than the existence of a mature cluster. This paper hence focuses on social structures and knowledge transfer in a clustering context.

So why do small firms cluster? As scholars such as Keeble & Wilkinson (2000), Storper (1997) and others point out, transaction cost savings alone is insufficient to explain the growth and persistence of clusters. One explanation is that large firms internalise much of the lateral, horizontal and vertical scope of a cluster. They are able to do so because they have economies of scale. SMEs are limited in their access to specialised resources and intelligent capital. Taylor and McRae-Williams (2005) posit that clustering simulates large firm behaviour, e.g., when small firms are not in a position to internalise externalities through economies of scale, they cluster to access resources, to reduce costs, to compete with larger firms, and to innovate. In other words, by networking and sharing knowledge, small firms are able to compete for and access specialised resources and information systems as well as internalise competencies and assets that typically are internalised by large firms with economies of scale (Tayler & McRae-Williams, 2005). Clustering hence provides SMEs benefits that would be unavailable or be available at a greater cost to non-clustering members. While value-added and activities such as R&D, access to a global client base and advanced business services/production are clearly major contributing factors for small business clustering, the need for access to localised explicit and tacit knowledge networks has proven to be a central driver for clustering (Keeble, 2000).

Regional Clustering and Local Networks

The growing influence of information and communication technologies (ICT) as the critical factor in shaping modernity and the distribution of economic advantage is relevant to regional development as it directly impacts on interactions between local and global forces. Giddens (1990) conceives globalisation as the stretching process between local involvement and interaction across distance whereby the "local transformation is as much part of globalisation as the lateral extension of social connections across time and space" (Giddens, 1990, 64). Applying his so-called 'glocalisation' framework, Robertson (1995) places spatial issues on an equal footing with temporal ones by examining local and global forces in a concrete locality. In Castells' (2000) notion of a 'regionalized, global economy' government intervention, regional (government) structures and networks play a significant role in the positioning of a region in the global economy (p102). Networking and the collaborative nature of the global economy reinforce tendencies towards geographical clustering because of the advantages to be gained from proximity to other firms in specialist and related industries (Enright & Roberts, 2001; Storper, 1997).

For SMEs, local networks represent a complementary response to insecurity arising from development and use of new technologies. The drive for SMEs to collaborate reduces uncertainties in the global economy and is a means of supplementing and complementing limited resources (Doloreux, 2004). Contrasting globalisation and localisation, Enright and Roberts (2001) conclude that in the new economy clusters are regionally driven with local communities seeking to maintain their social, environmental and economic agendas in a global economic climate. There is increasing evidence that the performance of existing enterprises is significantly improved by clustering (Rosenfeld, 2001).

Typically, firms and individual actors are embedded in a variety of formal and informal professional, social and intellectual exchange networks (Granovetter, 1973). The extent and importance of these networks usually relate to firms' and actors' horizontal and vertical relationships, network culture and strategic complementarity. The knowledge and social capital a person accumulates through networking is highly personal, tacit knowledge, and considered a valuable asset (Nonaka & Takeuchi, 1995). In terms of social capital transaction, external network relations accentuate 'bridging' forms of social capital, whereas internal network ties focus on 'bonding' forms of social capital (Putnam, 2000). Providing a comprehensive review of social capital literature across a variety of disciplines, Adler and Kwon (2002) list trust; reciprocity; social norms and obligations; participation in relationships; and pro-activity among the elements contained in social capital. Freeman (1991) similarly refers to factors such as trust, ethics and confidence in the cooperativeness of others for effective networking. It is not unusual for SMEs to fear opportunistic behaviour from competitors and scholars commonly stress the importance of trust and personal interaction in interfirm alliances (Gulati, 1995; Ring & Van de Ven, 1992). The trust may be historical and already exists between individuals of different firms or, conversely, may need to be fostered.

Trust and social capital are attributes not only of industry networks but also of entire geographic regions, which can help expedite economic development and facilitate large-scale economic activities (Fukuyama, 1995). Trust and reciprocity within clustering domains very much depends on the individuals within the network. When knowledge is broadened and new entrants are attracted, clustering dynamics change. The knowledge diffusion process is both place and industry dependent

(Braun, 2004) and differences can observed between narrow based knowledge clusters and broad-based knowledge clusters.

Thus, it may be argued that clusters and networks are different yet interdependent, whereby small business network structures underpin the growth and sustainability of clustering. Clusters and networks should hence be seen as two separate constructs, each with its own distinctive characteristics (Figure 1).

Figure 1 Clusters versus Networks Characteristics

Networks	Clusters
Networks allow firms access to specialised services at lower costs	Clusters attract needed specialised services to a region
Networks have restricted membership	Clusters have open membership
Networks are based on contractual agreement	Clusters are based on social values that foster trust and encourage reciprocity
Networks make it easier for firms to make complex products	Clusters generate demand for other firms with a variety of similar and related capacities
Networks are based on cooperation	Clusters take both cooperation and competition
Networks have common business goals	Clusters have collective visions

Adapted from Rosenfeld (2001)

High levels of networking and trust create embeddedness, strong ties and dependable behaviour (Granovetter, 1985), enabling open exchange of knowledge and ideas across the cluster domain, which in turn fosters high levels of localised collective learning, competitive advantage and innovation (Capello, 1999; Keeble & Wilkinson, 2000).

SME Clustering

Inspired by the prosperity of regions such as the 'Third Italy', which is characterised by strong local SME clustering and economic interdependencies, policy makers in different parts of the world have been seeking to duplicate successful SME clustering experiences to unlock the wealth of their own regions (Asheim, 2001). This is not to say that the Italian experience can easily be emulated. In Italy, cluster development has been dominated by the specific history and culture of northern Italy. This suggests a dominance of region rather than industry, an experience that may not be easily transferable to the rest of the world (McRae-Williams et al., 2005).

The SME clustering literature indicates that regional conditions have great bearing on the clustering process; that clustering is conditional on network member interaction; and that SME innovation networks are sustained through highly localised knowledge exchange and networking processes (Doloreux, 2004; Maskell & Malmberg, 1999).

In Indonesia, for example, SME clustering remains in its infancy, despite policy support to foster SME clustering. Indonesian SME clustering is dominated by latent clustering characteristics, typified by stagnation, insufficient critical mass, a low degree of actor interaction and a lack of access to external networks and markets (Tambunan, 2005). Conversely, Konstadakopulos (2000) provides empirical evidence of successful cross-border SME clustering in Singapore and Malaysia. Since aforementioned SMEs not only collaborate but also compete in an innovative milieu, Konstadakopulos (2000) deducts that information sharing and learning is taking place based on prior existence of trust and in an atmosphere of continued trust building between stakeholders. The author also points to national and international innovation networks which are providing these regional SMEs with the resources to become global players.

In Australia the Federal Government has also shown renewed interest in, and support for, industry clustering, although the philosophical debate whether clustering should be government- or industry-led varies from Australian state to state. The state of Victoria, for example, has opted for an industry-based cluster policy that focuses on attracting major national and foreign companies into the State (Enright, 2001)

Having identified some seventy regional small business cluster initiatives, Brown (2000) believes that Australian clusters have insufficient focus and still lack critical mass. A cluster development and cross-industry collaboration study in the state of New South Wales revealed much initial scepticism and lack of trust among industries and firms (Martinez-Fernandez, 1999). The limited Australian cluster literature concurs that small firms do not have a natural propensity towards collaboration.

There are, nonetheless, some recent reports on successful Australian collaboration in the agricultural sector (Insights, June 2002). In the Birchip Cropping Group, a farmer driven agricultural research cluster in western Victoria, value is created through social cohesion, the exchange of information, farmer learning and, perhaps above all, a shared vision, drive and passion (Lowe & Berrisford, 2002). Other positive cluster accounts come from the tourism industry. Natural resources have long provided small tourism firms with a clustering incentive around geographic icons such as a natural health spa or a national park. Natural assets in Far North Queensland, home of The Great Barrier Reef, have driven the Queensland tourism industry to concentrate on certain locations, demonstrating that the tourism industry has the potential to achieve positive economic outcomes through clustering (Roberts, 2000). On the virtual tourism cluster front, a collaborative e-commerce gateway was successfully adopted as an additional destination sales channel and supply chain booking service in Daylesford, Victoria (Multimedia Victoria, 2002). Conversely, a recently completed cluster complementarity study on co-located regional wine and tourism clusters suggests that cluster overlap does not necessarily influence the capacity of clusters or turn them from passive into active clusters (McRae-Williams et al., 2005).

European politicians have addressed the tension between competitiveness and cohesion within regions by using novel trans-sectoral and proactive approaches to create bridges between small firms, and between institutions and industry (The European Spatial Development Perspective, 1999). Recognising that economic growth is accomplished by designing regional-level intervention -- that allows actors within regions to shape their own development prospects and stimulate learning -- European spatial policy initiatives specifically include the building of epistemic or learning communities based on

embedded competencies and social structures (Henderson & Morgan, 2001; Maskell & Malmberg, 1999).

Learning and Knowledge Creation

In today's global economy, knowledge is considered a precious commodity and concepts like knowledge sharing and lifelong learning have become increasingly prevalent in business practices (Senge & Scharmer, 2001). In this new environment, the nexus of sustainable economic development rests upon the ability of partners to learn, create and harness knowledge collaboratively and continuously (Florida, 1995). In the transition to a learning-based economy, the 'new regionalism' focuses on social and institutional learning as the prime driving forces behind regional economic growth (MacKinnon, Cumbers, & Chapman, 2002).

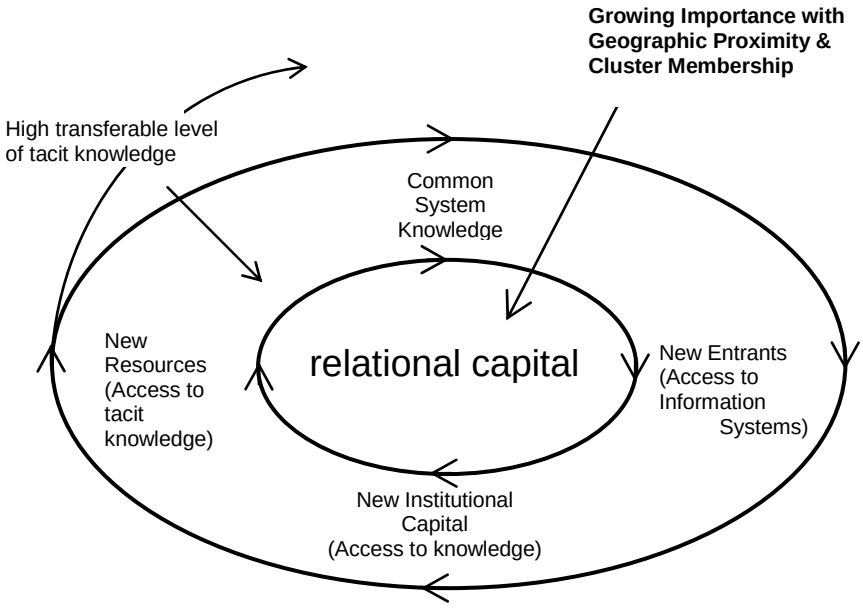
The concept of collective learning lies at the base of the innovative and creative milieu theory, whereby the presence of common knowledge goes beyond the individual firm yet remains within the boundaries of the milieu or, as the case may be, cluster domain (Cumbers, Mackinnon, & Chapman, 2002). Collective learning is generally defined in the literature as "a social process of knowledge accumulation", whereby knowledge creation through interaction and continuity provides an important vehicle for the transfer of knowledge over time (Capello, 1999, 720-721). Through collective learning, regional clusters can reduce uncertainty, foster innovative milieux, and augment creative capacity for firms by way of information and knowledge diffusion throughout the local network (Amin, 1999; Marceau & Dodgson, 1998; Storper, 1997). By formulating networks in which socially a variety of regional agents and institutions take part in interactive learning processes, it is believed that regions can create competitive advantage (Amin & Thrift, 1995; Lundvall & Johnson, 1994; Morgan, 1997).

Turning ourselves into collective communities of learning is, however, not an easy task (J. Brown & Duguid, 2000). Collective learning and knowledge creation are spiralling processes of interaction fusing explicit and tacit knowledge (Nonaka & Konno, 1998). Interaction creates new knowledge when actors bring their knowledge to a shared space, referred to by Nonaka and Konno (1998) refer to as *ba*. This space can be physical, mental, virtual, or a combination thereof. The socialisation, externalisation, combination and internalisation (SECI) cycle, which represent the four characteristics of *ba* space as described in the SECI model, provide the knowledge creation platform. Regardless of the environment, "to participate in *ba* means to get involved and transcend one's own limited perspective or boundary" (Nonaka & Konno, 1998, 47). Von Krogh et al (2000) emphasise the need for an enabling context for learning and knowledge sharing, based on the *ba* concept, where participants set and change their own boundaries of learning (Von Krogh, Ichijo, & Nonaka, 2000). In considering regionally embedded network conditions, suitable local learning constructs can be designed (Braun & Billard, 2002).

Apart from enabling learning constructs, there are relational capital issues to consider and questions that arise, e.g., what type of relational knowledge are generated at what stage of the SME clustering process? Large firms are able to access specialised knowledge because they are large enough to internalise knowledge. SMEs, to the contrary, are limited by their access to specialised knowledge. They can, however, compete with larger firms by accessing specialised knowledge through clustering.

Based on the Swann et al (1998) virtuous clustering model, which positions relational capital at the core of cluster strength, the authors propose that SME knowledge exchange is a cyclical process, with different types of knowledge being exchanged at different points of cluster maturity. In other words, a certain amount of codified data and information has been captured by the system, which is augmented by new entrants, which leads to increased institutional knowledge, which in turn creates more tacit knowledge and attracts new resources (and entrants). The model cycles upward (indicating growth) as the steps are repeated (Figure 3).

Figure 3 Relational Capital Cycle



Knowledge becomes more important with geographic proximity and cluster membership, whereby a distinction is made between access to data captured in a common system versus access to data captured in an information system; data which is part of institutional knowledge; and data which has become tacit knowledge. Data captured in a common system is accessible by and to all (e.g., using a search engine on the Internet). To access and understand data captured within a specific information system (or in an industry context), geographic proximity is desirable, if not necessary. Knowledge might for example be obtained through industry association membership. Institutional capital is highly location and boundary specific (you have to be there to be 'in the know'), while tacit knowledge is embedded within the local system, industry or community. To access tacit knowledge proximity is required, e.g., the very reason why SME clustering membership is important.

Three regional Australian clustering studies provide some initial insights into these relational capital propositions. In a regional small business tourism network study, both place and industry had an impact on SME knowledge exchange (Braun, 2004). In this study, tourism SMEs felt disconnected from the domain, displayed a low level of interfirm trust, and showed little interest in clustering. This resulted in latent clustering behaviour, whereby some data and information was traded, but no tacit knowledge was exchanged. Without exogenous pressure on endogenous network relationships, regional industry actors shaped their individual futures in isolation.

The latter study result is in sharp contrast with a clustering study in the grains industry conducted in a geographic location near the tourism cluster. In assessing the extent and infrastructure of the grains industry in the region, the study found that regional agricultural actors maintained close communication ties, displayed a high level of trust, and were committed to exchanging tacit knowledge for cluster growth purposes. As a result, value was created for both the performance of the cluster and for the end user of the product (Lowe & Berrisford, 2002).

In the third study the level of interaction or complementarity between two co-located industries — wine and tourism — was assessed. The wine and tourism industries within the Western Victoria region share a number of common attributes such as geographic co-location and economic, social and natural resource assets. In some cases the industries compete for land, capital and skilled labour. However, they also have significant demand and supply side complementarities that create better conditions for the development and performance of both industries. In this study it was evident that wine clustering actors were inclined to exchange knowledge with each other and with the tourism industry, but the reverse was not the case. This research confirms tourism industry findings of the aforementioned tourism study, raising important questions about the role of industry and place on clustering and knowledge transfer activities.

In the three case studies, relational capital resulted in either strong or weak regional ties with implicit clustering implications. All cases show that relational resources can be purposely used to encourage and enhance regional clustering success. These case studies also raise questions about SME understanding of the possible implications of operating in isolation versus through place and industry in terms of long-term impact on the region's global visibility and strategic opportunities.

Future Directions

Apart from discussing the need to provide enabling constructs for SME learning, the authors have raised questions surrounding relational capital and introduced a cyclical model to indicate what type of relational knowledge is generated at what stage of the SME clustering process. Based on the Swann et al (1998) virtuous clustering model, which positions relational capital at the core of cluster strength, the authors propose that SMEs exchange different types of knowledge — ranging from data, to information, to knowledge, to tacit knowledge — and that these types of knowledge interactions occur at specific points in the clustering process.

The paper briefly highlighted three regional Australian small business clustering studies, raising questions about SME understanding of the possible implications of operating in isolation versus through place and industry in terms of global visibility and strategic opportunities.

What are the implications for cluster development and new venture creation in different industries and different places? US data suggests that there are dominant locations and that some industries, particularly science based industries are over-represented (Institute for Strategy and Competitiveness, 2004). Whilst the impact of place and industry are examined in some detail in these studies, SME relationships to clustering, place and industry are not specified. Other data emanates from the classic industrial districts of Italy (Harrison, 1991) and suggests a dominance of region rather than industry, an experience that may not be easily transferable to the rest of the world (McRae-Williams et al., 2005). Our own research suggests that SME behaviour impacts on knowledge creation and knowledge transfer, which in turn has implications for both industry as well as place. The relationships may be illustrated thus:

Figure 4 Clustering and SME behaviour

In the above model, clustering behaviour is determined directly by industry, place and SME behaviour. Conversely, SME knowledge creation is determined directly by industry and by the personal characteristics of actors. Thus, if place and industry affect clustering processes and if industry affects SME clustering behaviour and knowledge exchange, arguably there is always a degree of interdependence (simultaneity) between SME behaviour and clustering processes.

From our regional wine and tourism clustering studies we have been able to deduct that type of industry also has an impact on clustering processes and knowledge flows, as illustrated below in Figure 5.

Figure 5 Industry Characteristics

Tourism Industry	Wine Industry
Broad knowledge base	Narrow knowledge base
Low entry barriers	Professional entry requirements
Low/non-specialised skill base	Highly specialised skills
Weak network ties/weak social structure	Strong network ties/strong social structure
Low level of collaboration (data sharing)	High level of collaboration (tacit knowledge sharing)
Low level of clustering	High(er) level of clustering

What are the implications for cluster policy in different industries and different places? This paper has shown that some places and some industries cluster better than others. Clustering policies often overlooks this important fact. If place and industry do play differential roles, clustering policies should allow for place and industry differentiation. Furthermore, since clusters are critical for SMEs in terms of access to resources and knowledge, general policies directed towards SMEs should always include clustering aspects. While such policies cannot capture tacit knowledge or compel network actors to exchange knowledge, they can enhance clustering processes and help to capture knowledge through the fostering of institutional capital. The Australian Government, for example, is establishing so-called technical colleges which will have curricula that are responsive to local needs (Department of Education Science and Training, 2005). These types of institutions are well placed to capture and disseminate industry knowledge.

Despite this popularly adopted regional development agenda by academics and international policy makers (APEC, 2001; OECD, 1999), there are limitations to consider vis-à-vis the dependency on learning for regional innovation (MacKinnon et al., 2002). Although regional learning is presumably anchored in endogenous capacities — that is, the social and institutional relationships within a region — we cannot disregard innovation and knowledge creation via exogenous or extra-local influences such as extra regional and global Internet networks {MacKinnon et al., 2002}. Besides, as Freeman (1994) has pointed out, those (nations) that are adept at matching institutional innovation with the emerging techno-economic paradigm are likely to forge ahead; those that suffer from institutional 'drag' or inertia may fall behind (Freeman, 1994). Focusing on the dynamic nature of the new economy, Maskell and Malmberg (1999) similarly point out that the capacity to learn and adapt to change defines the success of a region. However, it may be said that in our connected society there is unprecedented emphasis on learning and the creation, distribution and exchange of information and knowledge (Asheim, 2001) (P Maskell & Malmberg, 1999).

Even more difficult perhaps is how to measure the often-intangible outcomes of collaboration and learning for regional development purposes, e.g., the innovative behaviour of SMEs and regional clusters. Still in its infancy with little practical evidence available as to its merit (Maskell, 1997), evaluation models associated with regional clustering policies continue to be based on traditional quantitative statistical and econometric analysis methods (Diez 2001). New evaluation metrics for regional development policies and associated learning practices would do well to move away from traditional economic impact or monetary cost-benefit analyses towards interactive and participatory regional evaluation processes (Diez, 2001)). Formative and summative evaluation processes might include demand-side trust, perceived value added and other intangibles such as social capital, absorptive capacity and traded knowledge (Henderson & Morgan, 2001).

In considering the critical factors of regional clustering (communication and a collaborative culture) in the context of geographic concentration and learning, it is essential to recognise the need for learning constructs and support to build network capacity to learn and change. In North America, the formation of interfirm learning networks is closely linked to Mode 2 learning; network development academics and practitioners often use action research methodologies since Mode 2 learning and action research support reflexive learning processes and promote change (Chisholm, 1998). In Scandinavia, action

research is consistently used to optimise regional learning and network organisation (Gustavsen, 1998; Hanssen-Bauer, 1998). In University-led SME learning networks in Sweden, action research methods have successfully assisted small companies to form closer relationships and beneficial learning partnerships. Positive outcomes ensue when SME learning styles and needs were met; trust between firms was built; and committed interest in the learning network was present (Tell, 2001). In building knowledge creation networks, it is also essential to consider the role of technology itself. Computer-based collaborative learning environments now form an integral part of the larger context of economic collaboration and hence merit further attention to optimise the values and principles of regional SME clustering and collaborative learning.

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